

1. A process for making a metal-polymer composite suitable for shaping into food and beverage container end panels and container bodies, comprising:

a. applying to a metal sheet a coating comprising a fully polymerized or nearly fully polymerized polymer selected from the group consisting of polyolefins, anhydride-modified polyolefins, epoxies, and phenoxies, and

b. scissioning polymer chains in said polymer by irradiating said coating with an electron beam, thereby to improve resistance of said coating to feathering and angel hair formation.

2. The process of claim 1 wherein said metal sheet comprises a metal selected from the group consisting of aluminum alloys, steel, aluminum alloy-coated steel, and aluminum-coated steel.

3. The process of claim 1 wherein said metal sheet comprises an aluminum alloy of the AA3000 or AA5000 series.

4. The process of claim 1 wherein said polymer comprises a polyolefin selected from the group consisting of polypropylene, polyethylene, propylene-ethylene copolymers, propylene-1-hexene copolymers, and mixtures thereof.

5. The process of claim 1 wherein said polymer comprises a polyolefin selected from the group consisting of polypropylene and copolymers comprising propylene and up to about 50 mole percent of a co-monomer.

6. The process of claim 1 wherein said polymer comprises a polyolefin modified with an anhydride selected from the group consisting of maleic anhydride, citraconic anhydride, itaconic anhydride, glutaconic anhydride, 2,3-dimethylmaleic anhydride, and mixtures thereof.

7. The process of claim 1 wherein said polymer comprises a polyolefin modified with about 0.5-20 weight percent maleic anhydride, based on the weight of the polyolefin.

8. The process of claim 1 wherein the step of applying the polymer coating to the metal sheet comprises extrusion coating, roll coating, or laminating.

9. The process of claim 1 wherein the step of irradiating comprises irradiating at a dosage of about 2-20 megarads.

10. The process of claim 1 wherein said step of irradiating is carried out for a sufficient time to embrittle said polymer in said coating.

11. The process of claim 1 wherein said polymer in said coating is fully cured before said step of irradiating.
12. The process of claim 1 further comprising
 - c. shaping said composite into a container body or container end panel.
13. The process of claim 12 wherein step b. is performed before step c.
14. The process of claim 12 wherein step b. is performed after step c.
15. The process of claim 1 further comprising
 - d. before step a., conversion coating a surface portion of said metal sheet.
16. A process for making an aluminum-polymer composite suitable for shaping into container end panels having improved resistance to feathering and angel hair formation, comprising
 - a. applying to an aluminum alloy sheet a cured polymer coating comprising a fully polymerized maleic anhydride modified polyolefin, said polyolefin being selected from the group consisting of polypropylene and copolymers comprising propylene and up to about 50 mole percent of a co-monomer, thereby to form an aluminum-polymer composite, and
 - b. scissioning chains in said maleic anhydride modified polyolefin by irradiating the cured polymer coating on said composite with an electron beam.

17. An aluminum-polymer composite made by the process of claim 16.

18. A container end panel shaped from the composite of claim 17.